

Exhaust Gas Recirculation (EGR) Valves

EGR systems **reduce the nitrogen oxides** that are formed in the combustion chamber of the engine, by **lowering the combustion temperature**. EGR systems are widely recognised for reducing nitrogen oxides in diesel engines. In petrol engines, EGR is primarily used for **de-throttling the engine to reduce fuel consumption** – the reduction of nitrogen oxide is a secondary function.



Technology Types

The main types of EGR valve are pneumatic and electric:

Pneumatic EGR valve system features:

- Flexibility
- Lower energy consumption
- Low size and weight
- Low cost
- Controlled pneumatically – a vacuum controlled diaphragm box actuates the valve stem in a manner that allows the cross-section of the valve opening to be varied as needed



Electric EGR valve system features:

- Calibrated in the engines performance map
- Highly dynamic for fast adjustment of the operating point
- Good metering throughout the engines performance range
- High EGR rates
- Simple and direct control
- High reliability and operational performance
- No servo energy (no pneumatics)
- Low nitrogen oxide emissions
- Reduced fuel consumption in petrol engines



Troubleshooting and Diagnostics

The most common cause for malfunctions in the EGR system are **seized or carbonised** EGR valves:

Causes

- **Soot particulates, carbon deposits and oil** are all contaminants which can cause the valve to stick, potentially preventing it from opening or closing.
- Damage to valves may also be caused by **exposure to excessively high temperatures**.
- On pneumatic style valves, malfunctions may also be caused by **faults in other vacuum system components** such as vacuum pumps, vacuum lines and solenoid valves so these should also be checked.



Symptoms

- Faulty EGR valves result in **jerking, irregular idling or insufficient engine power**.

Solution

- If EGR valves are faulty then it is important to **replace rather than attempt to clean them**.
- Many EGR valves **have to be adapted** to the engine ECU after being fitted. This can be done by self-adaptation of the components with a test drive or through prompts that appear on the diagnostic tool. **Pierburg recommends adaptation to be carried out via the diagnostic tool**.

Links

Click on the links below to find out more...

Range Coverage

Pierburg is the **European market leader for EGR and emission control** with units being installed as OE in many modern vehicles.

For more information visit the Part Info website or speak to your local motor factor...

Part Info

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